

September 19, 2002

Oscar Hernandez, Director
Risk Assessment Division
Office of Pollution Prevention and Toxics
U.S. Environmental Protection Agency
1201 Constitution Avenue N.W.
Washington, DC 20460-0001

RE: Response to EPA Comments on the Olefins Panel Test Plan for the Resin Oils and Cyclodiene Dimer Concentrates Category, HPV Registration No.

On December 18, 2001, the American Chemistry Council Olefins Panel (Panel) submitted a test plan on the Resin Oils and Cyclodiene Dimer Concentrates Category under the HPV Chemical Challenge Program. In a letter dated July 26, 2002, you raised some issues about the Panel's test plan. Subsequently, several Panel scientists met with Mr. Richard Hefter, Chief of the HPV Chemicals Branch and other EPA staff members to discuss the issues. This letter will review and supplement the discussion of the issues raised by EPA. In addition, the Panel is resubmitting with this letter a revised Test Plan and revised Robust Summaries. These documents were revised to address the issues raised by EPA and to further clarify the test strategy.

EPA Issue #1: The use of a defining substance (dicyclopentadiene dimer, DCPD) as the preferred approach to characterize members of this category does not appear compatible with the wide range of chemical compositions represented by the subject streams.

DCPD (dicyclopentadiene or cyclopentadiene dimer, but not dicyclopentadiene dimer) is the major component (content range from 40% to 80%) of the majority of the olefin process streams that comprise the Resin Oils and Cyclodiene Dimer Concentrates Category. These DCPD-containing streams account for approximately 80% of the total category production, not including the volume associated with High Purity DCPD (See attached Figure 1). Hence, as the major stream component, the toxicology of DCPD is anticipated to be significant in characterizing the toxicity of the streams in this category.

DCPD is also representative of the chemistry of many of the components found in the Resin Oils and Cyclodiene Dimer Concentrates streams. One characteristic of the streams in this category is the presence of dimers or codimers. Dimers are comprised of two units of the same molecule. In the case of DCPD, the dimer is comprised of two molecules of the monomer cyclopentadiene. The dimer of methylcyclopentadiene (MCPD) is the other dimer found in the category streams at significant concentrations. In addition, cyclopentadiene and MCPD molecules combine either with each other or with other reactive molecules such as

butadiene, isoprene, piperylenes and vinyl aromatics to form codimers. The toxicity of DCPD is expected to be representative of the toxicity of these other similar molecular weight dimers and codimers.

The streams in this category are comprised of a number of components, but the majority of the streams are similar in terms of their carbon number range, the hydrocarbon class and the dimer/codimer versus monomer content (See attached Table 1). DCPD is a C10, dimer, aliphatic hydrocarbon and the majority of the category streams are comprised of predominately C8 to C12, dimers and/or codimers, aliphatic hydrocarbon components. The DCPD content of these streams ranges from 1% to 94+%. As these substances have similar chemistries, it is reasonable to hypothesize that the olefin streams of this compositional type will behave similarly in biological systems. Some of the processes used in stream manufacture, however, do yield variations in the hydrocarbon attributes with a few streams differentiated with higher content of C4 to C7, monomer, or aromatic content (See attached Figure 2 and Table 1). As these compositional variations could impart different biological activity to these olefins stream, the assessment scheme for the Resin Oils and Cyclodiene Dimer Concentrate Category proposes to conduct testing on select streams that span the spectrum of the streams' compositions. The streams selected for testing along with the existing information for High Purity DCPD also span the range of DCPD content present in the stream category.

For these reasons, DCPD is considered the key component of the Resin Oils and Cyclodiene Dimer Concentrates category. It is acknowledged, however, in the absence of stream testing results that it may be premature to proclaim DCPD as the "defining" substance for this olefin stream category; therefore, this portrayal was revised in the Test Plan document.

EPA Issue #2: The Table on page 2 suggests dividing the streams into three subcategories, however the same logic is not present in the Assessment Plan Table (Table 3, page 8).

The description of the Resin Oils and Cyclodiene Dimer Concentrates Category in the body of the December 18, 2001 Test Plan (December Test Plan) document gave emphasis to industry processing aspects of the nine category streams which supported the three major process stream subcategories given in the table on page 2 of the December Plan. There are, however, overlaps in the chemistry and composition of the nine streams within the process groupings which form the basis of the Resin Oils and Cyclodiene Dimer Concentrates Category hypothesis and approach to stream hazard assessment/testing (as summarized in Assessment Plan Table 3 of December Test Plan, page 28). As discussion of the three industry process stream subcategories may be unnecessarily confusing to the reader, the Test Plan document was revised to reduce the emphasis on these process stream subcategories.

EPA Issue #3: It is not clear why MCPD is being tested (as stated in the text, although it is not reiterated in Table 3, page 28) if the basis for the category is DCPD.

The Test Plan proposes to test MCPD Dimer, not MCPD, in support of the Resin Oils and Cyclodiene Dimer Category streams.

As discussed above, DCPD is the key component for the majority of the Resin Oils and Cyclodiene Dimer Concentrates Category streams. MCPD dimer (methylcyclopentadiene dimer), a similar carbon range, dimer, aliphatic hydrocarbon is present in some of the category streams and, in one stream, it is the major (90+ %) hydrocarbon component. The chemical structure of MCPD dimer is substantially similar to DCPD as MCPD dimer is the dimer of methylcyclopentadiene and DCPD is the dimer of cyclopentadiene. The addition of two methyl groups to the hydrocarbon backbone ring is not anticipated to impart significantly different biological properties to those of DCPD; however, this hypothesis is proposed to be tested in the assessment plan strategy. Also as this stream is differentiated from other streams because it is a relatively pure substance, testing on this aspect was considered warranted.

With regard to the discrepancy in Table 3, page 28 of the December Test Plan, the table entries are in error for the human health effects endpoints and the correct entries should be indicated as "T." The Test Plan document has been revised to make this correction. Note that in the revised test plan the assessment table becomes Table 4 and is now found on page 29.

EPA Issue #4: Based on #3 above, the inclusion or role of MCPD in the category is unclear.

As stated above, MCPD dimer (not MCPD) is a component of some of the streams in the Resin Oils and Cyclodiene Dimer Concentrates Category and as such is proposed for testing. If the testing results for the MCPD Dimer stream support the hypothesis that this substance's toxicology profile is similar to DCPD, then the MCPD Dimer stream toxicity data will be applied to the stream category assessment. Alternatively, if the MCPD Dimer stream toxicology profile is found to be significantly different from that of DCPD, then the MCPD Dimer stream will likely need to be segregated from the Resin Oils and Cyclodiene Dimer Concentrates Category and be characterized by its own testing data. Decisions on characterization of the other streams that contain MCPD dimer as a component would depend on the results of the other test streams on the overall category assessment.

The Panel believes that this letter and the revised Test Plan and Robust Summaries address the issues raised in your letter. However, if you have additional questions, please contact me at 301 924 2006 or Elizabeth_Moran@americanchemistry.com.

Yours truly,

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Manager, Olefins Panel

Attachments

cc: Richard Hefter